

## Practice: 632 - Solid/Liquid Waste Separation Facility

### Scenario # 1 Earthen Settling Structure

#### Scenario Description:

Missouri

An earthen structure, such as a basin or a terrace or dike like structure, used to capture and separate a portion of the solids from a liquid stream from a feedlot or confinement facility. A concrete pad should be installed on the bottom of the basin and around outlet structures to facilitate cleanout. Removes as portion of the solids to facilitate waste handling and to address water quality concerns.

Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).<sup>2</sup>

#### Before Practice Situation:

Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.

#### After Practice Situation:

One earthen settling basin structure (60 ft wide by 200 ft long by 3 ft deep, with three screening outlet structures) constructed around or at a livestock feeding operation. Removes a portion of the solids that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.

#### Scenario Feature Measure:

Cubic Foot of Total Storage

#### Scenario Typical Size:

30000

Cubic Foot

Tot Unit Cost

\$0.30

Cost Category		Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Weeping Wall		24	Foot	\$51.00	\$1,224.00
Materials	Aggregate, Gravel, Graded		14	Cubic yard	\$24.76	\$346.64
Equip./Install.	Concrete, CIP, slab on grade, reinforced		12	Cubic yard	\$253.20	\$3,038.40
Equip./Install.	Earthfill, Roller Compacted		1000	Cubic yard	\$3.62	\$3,620.00
Labor	General Labor		8	Hour	\$21.56	\$172.48
Mobilization	Mobilization, small equipment		2	Each	\$136.80	\$273.60
Mobilization	Mobilization, medium equipment		2	Each	\$200.43	\$400.86

Total Cost: \$9,075.98

#### Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$0.23	EQIP-HU	\$0.27
EQIP-MRBI	\$0.23	EQIP-HUMRBI	\$0.27

## Practice: 632 - Solid/Liquid Waste Separation Facility

### Scenario # 2 Concrete Basin

#### Scenario Description:

Missouri

A concrete structure, such as a basin with concrete walls and floor, used to capture and separate a portion of the solids from a liquid stream from a feedlot or confinement facility. Removes as portion of the solids to facilitate waste handling and to address water quality concerns.

Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).<sup>2</sup>

#### Before Practice Situation:

Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.

#### After Practice Situation:

One 3' deep concrete settling basin structure (20'x20' flat bottom with 3' walls on 2 sides, 10:1 ramps on other sides, 50'x50' overall footprint) and weeping wall/picket structure or outlet control) constructed at the outlet of a open feedlot. Removes a portion of the solids that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.

#### Scenario Feature Measure:

Cubic Foot of Total Storage

#### Scenario Typical Size:

3900

Cubic Foot

Tot Unit Cost

\$4.11

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Weeping Wall	15	Foot	\$51.00	\$765.00
Materials	Aggregate, Gravel, Graded	38	Cubic yard	\$24.76	\$940.88
Equip./Install.	Concrete, CIP, slab on grade, reinforced	33	Cubic yard	\$253.20	\$8,355.60
Equip./Install.	Concrete, CIP, formed reinforced	12	Cubic yard	\$402.08	\$4,824.96
Equip./Install.	Earthfill, Roller Compacted	50	Cubic yard	\$3.62	\$181.00
Equip./Install.	Excavation, Common Earth, side cast, small	50	Cubic yard	\$1.96	\$98.00
Labor	General Labor	8	Hour	\$21.56	\$172.48
Mobilization	Mobilization, small equipment	2	Each	\$136.80	\$273.60
Mobilization	Mobilization, medium equipment	2	Each	\$200.43	\$400.86

Total Cost: \$16,012.38

#### Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQUIP	\$3.08	EQUIP-HU	\$3.70
EQUIP-MRBI	\$3.08	EQUIP-HUMRBI	\$3.70

**Practice: 632 - Solid/Liquid Waste Separation Facility****Scenario # 3 Concrete Sand Settling Lane****Scenario Description:****Missouri**

A concrete structure, a concrete lane with curbs, used to capture and separate a portion of the solids, mainly sand, from a liquid stream from a confinement facility. Removes as portion of the solids to facilitate waste handling and to address water quality concerns.

Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).<sup>2</sup>

**Before Practice Situation:**

Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.

**After Practice Situation:**

One concrete settling lane structure (25 ft wide by 200 ft long by 0.5 ft thick with 18" walls on each side.) constructed around or at a livestock feeding operation. Removes a portion of the solids (sand) that otherwise would leave with the runoff from an animal feeding operation. Part of an animal waste management system.

**Scenario Feature Measure:**

Square Foot of Settling Lane Footprint

**Scenario Typical Size:**

5000

Square Foot

Tot Unit Cost

\$6.94

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Aggregate, Gravel, Graded	62	Cubic yard	\$24.76	\$1,535.12
Equip./Install.	Concrete, CIP, slab on grade, reinforced	78	Cubic yard	\$253.20	\$19,749.60
Equip./Install.	Earthfill, Roller Compacted	90	Cubic yard	\$3.62	\$325.80
Equip./Install.	Concrete, CIP, formed reinforced	30	Cubic yard	\$402.08	\$12,062.40
Equip./Install.	Excavation, Common Earth, side cast, small	180	Cubic yard	\$1.96	\$352.80
Mobilization	Mobilization, small equipment	2	Each	\$136.80	\$273.60
Mobilization	Mobilization, medium equipment	2	Each	\$200.43	\$400.86

Total Cost: \$34,700.18

**Payment types:**

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$5.21	EQIP-HU	\$6.25
EQIP-MRBI	\$5.21	EQIP-HUMRBI	\$6.25

## Practice: 632 - Solid/Liquid Waste Separation Facility

### Scenario # 4 Gravity Tank

#### Scenario Description:

Missouri

A concrete tank used for gravity separation of solid material in a dairy waste management system. The waste management system must utilize a "flush" type system in order to convey and agitate the material. The flush system is needed to maintain high solids removal. Associated practices include Nutrient Management (590), Composting Facility (317), Anaerobic Digester (366), Waste Storage Facility (313), Waste Recycling (633), Waste Transfer (634), Pumping Plant (533), Vegetated Treatment Area (635), Pond Lining or Sealing (521A-D), and Waste Treatment (629).

#### Before Practice Situation:

Applicable to situations where partitioning solids, liquids, and nutrients will facilitate the management of an animal waste management system, improve air quality (reduce odors), and address water quality concerns.

#### After Practice Situation:

A concrete tank 20' x 20' x 6' with a full width ramp of 20' x 72'. For a total structure capacity of 6,720 cu ft. Separator description: Dairy manure is flushed into the Gravity Tank (Pull Plug) Separator that utilizes a vertical pipe, surrounded by a baffle, that is open at the top. The vertical pipe maintains 4.5 feet of material in the tank. When the manure is flushed into the tank the level rises in the tank and slowly drains through the baffle, floating mat of fibrous material (roughage from the dairy manure) and the open top of the vertical pipe as the level returns to 4.5 feet. The liquid goes to a storage structure.

This process is repeated each time the manure is flushed into the tank, typically 2 times per day. The floating material will form a mat on the surface of the separator, the heavy material will sink to the bottom of the separator. Eventually the floating mat and the heavy material will meet and the tank level will not return to 4.5 feet. The basin will continue to be used a few more weeks. This helps to dewater the separated solids. When the separator is ready to be cleaned out the vertical pipe (Pull Plug) is removed and the basin dewatered for 12 to 24 hours. The solids are removed. The vertical pipe installed and the process starts again.

#### Scenario Feature Measure:

Total capacity of basin

#### Scenario Typical Size:

6720

Cubic Foot

Tot Unit Cost

\$3.39

Cost Category	Component Name	Quantity	Unit	Unit Cost	Cost
Materials	Aggregate, Gravel, Graded	24	Cubic yard	\$24.76	\$594.24
Materials	Pipe, PVC, 6", SDR 35	36	Foot	\$3.48	\$125.28
Equip./Install.	Concrete, CIP, slab on grade, reinforced	50	Cubic yard	\$253.20	\$12,660.00
Equip./Install.	Concrete, CIP, formed reinforced	20	Cubic yard	\$402.08	\$8,041.60
Equip./Install.	Excavation, Common Earth, side cast, small	300	Cubic yard	\$1.96	\$588.00
Mobilization	Mobilization, medium equipment	4	Each	\$200.43	\$801.72

Total Cost: \$22,810.84

#### Payment types:

PayType	Unit Payment	PayType	Unit Payment
EQIP	\$2.55	EQIP-HU	\$3.06
EQIP-MRBI	\$2.55	EQIP-HUMRBI	\$3.06